FANOX

TEMPERATURE CONTROLLER FANOX TP 720

Packaging content:
- » PID Controller.
- » Back cover.
- » Brackets.
- » Rubber outline.
- » User manual.

Thank you for purchasing this product. We suggest to read the user manual carefully before using the equipment with the purpose of getting used to its configuration and operating. Keep the manual for any after-query.

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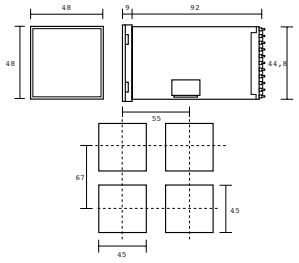
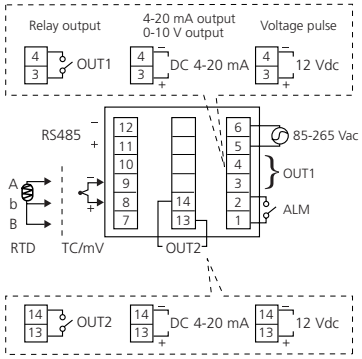
DIMENSIONS / CUTOUT

Unit: mm



WARNING

- » Make sure to tight correctly the connection terminals. If this is not done correctly mechanical failures or even fire may occur.
- » Please, do not install this equipment in locations where inflammable gases can exist, due to the possibility of explosion.
- » The life-time of the equipment depends on the way of use. If that life-time is exceeded, the probability of deterioration of the equipment increases.
- » Do not dismantle, review or repair the equipment by your own without authorization. This can cause short circuits on electrical parts, failures or fire.
- » Do not introduce metallic elements between the chips of the interior of the equipment or short circuits and fire could be produced.



CAUTION

Please read the following warnings carefully, which will allow you to use correctly the equipment:

- » Use the equipment within the specified limits for its water immersion and exposure to oil.
- » Do not use the equipment in locations exposed to vibrations or thumps. The use of the equipment in these locations can cause damages due to stress.
- » Do not use the equipment in locations exposed to dust, corrosive gases or direct sun.
- » Separate the input signal devices, the cables of input signal and the equipment from noise sources or high voltage cables that generate noises.
- » Separate the equipment from static electricity sources when the equipment is used in areas where a lot of static electricity is generated (e. g. manufacture of compounds, dusts or transport of fluid material by pipes).
- » The organic solutions as well as basic or acid solutions could damage the case of the temperature controller.
- » Store it to the specified temperature. If the temperature controller has been stored under – 10 ºC, keep the equipment to room temperature during a minimum of 3 hours before using it.

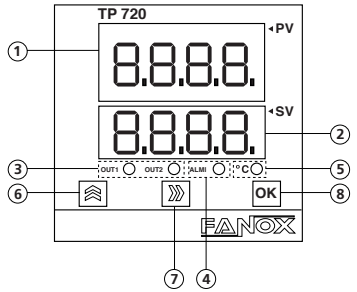
Please, verify the supply characteristics of the equipment. Do not connect the terminals that are not going to be used.

We propose the use of AWG 18 – 24 cables for the signal line and AWG 25 – 30 cable for the supply and exit contact relay.

SPECIFICATIONS

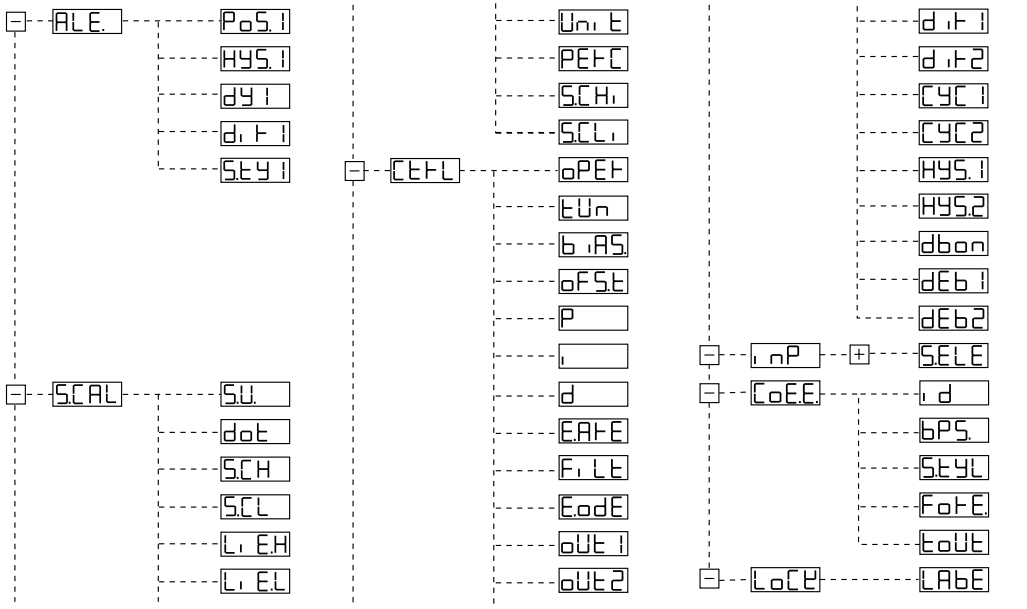
Supply:	85~265 Vac, 50/60 Hz
Display:	Upper display (red): 4 digits 0,56" 7 segments Lower display (green): 4 digits 0,36" 7 segments
Input signal:	Thermocouple: J, K, B, N, R, S, T, E RTD: PT100, JPT100 Voltage DC: 0~350 mV
Output control:	Output relay (resistive) SPDT, 5A/250 Vac Output pulse voltage (SSR) NPN, 20 mA at 12 Vdc Analog output (max. 600_): 4~20 mA, 0~10 Vdc
Alarm relay:	SPST-NO, 3A/250 Vac (resis.)
Dwell time:	00~99 s
Hysteresis:	0~999,9 ºC (ºF)
Communications:	Output RS485
Operating conditions:	0~50 ºC (20~85 % HR)
Output control cycle:	0~999,9 s
Decimal point:	0~3 digits
Digital filter:	1~100
Control method:	ON/OFF or PID (Autotuning)
Offset input:	-199,9~999,9
Fraction value:	0000~9999
Setting range:	-1999~9999
Accuracy:	± 0,3 % ± 1 digit
Sampling time:	200 ms
Memory:	EEPROM

FRONTAL PANEL



1. Process value and function visualization: Red LED of 7 segments.
2. Setting value and parameters visualization: Green LED of 7 segments.
3. Indication of the output control.
4. Indication of alarms.
5. Indication of units.
6. key : Back up to a superior level and add.
7. key : Advance to an inferior level and position.
8. key : OK Move inside a level and confirm.

PROGRAM SETTING FLOWCHART



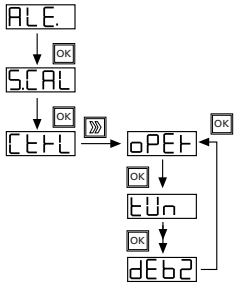
BUTTONS EXPLANATION

The settings of the equipment are controlled by means of 3 push-buttons located in the front. First, you must decide which function you want to enter and then use the push-buttons to reacht it. The push-buttons are used in the following way:

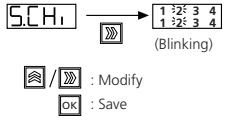
	Selection	Settings
FORWARD	Advance to inferior level	Position
BACKWARD	Back up to a superior level	Add
OK	Move in a level	Confirm

BUTTON "OK"

1) Allows to move in a menu.

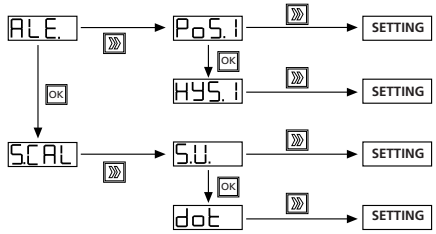


2) Confirm to save the settings.



BUTTON "FORWARD"

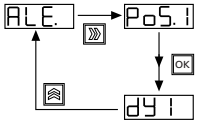
Allows to advance from a superior level to an inferior level.



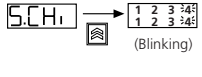
It is also used to move between the positions of the digits of a value to change.

BUTTON "BACKWARD"

Allows to back up from a inferior level to a superior one:



It is also used to increase in a unit the selected digit.



FUNCTION LIST

Ítem	Subitem	Range	Default	Description
ALE.	Pos1	-1999~9999	0	Alarm relay position 1
	HYS1	0000~9999	0	Alarm relay hysteresis 1
	dY 1	00~99	00 s	Alarm relay delay 1
	di r1	Hi/Lo	Hi	Alarm relay direction 1
	StY1	St 1-St8	St1	Alarm relay style 1
		St9		Alarm follow the action of Out 1
		St 10		Alarm follow the action of Out 2
SCAL	SV	-1999~9999	0	Set value SV
	dot	dot0-dot3	dot 1	Decimal point set
	SCH	-1999~9999	9999	Scale upper limit value
	SCL	-1999~9999	0	Scale lower limit value
	Li EH	-1998~9999	9999	Maximum range value SV
	Li EL	-1999~9998	-1999	Minimum range value SV
	Unit	oC/oF	°C	Unit
	PErC	on/oFF	OFF	Percentage
	SCHi	000,0~1000	100	Scale input upper limit value
	SCLi	000,0~100,0	0	Scale input lower limit value
CtrL	oPEr	Pid/onoF	ON/OFF	Operation
	tUn	tUn/oFF	OFF	Autotuning
	bi AS	-1999~9999	0	Input setting PV
	oFSt	-1999~9999	0	SV offset value during autotuning
	P	0000~9999	3	P value
	I	0000~9999	200	I value
	d	0000~9999	20	D value
	rESEt	0000~9999	0	Manual reset
	Filt	1~100	1	Input digital filter
	CodE	H-C	H-C	Hold temperature over room temperature
		CooL		Hold temperature below room temperature
	oUt1	HEAt	HEAt	Heater is controlled by Out 1
		CooL		Cooler is controlled by Out 1
	oUt2	HEAt	CooL	Heater is controlled by Out 2
		CooL		Cooler is controlled by Out 2
	di F1	Hi/Lo	Hi	Control output direct / reverse operation 1
	di F2	Hi/Lo	Hi	Control output direct / reverse operation 2
	CYC1	0000~9999	5 s	Cycle time 1 (seconds)
	CYC2	0000~9999	5 s	Cycle time 2 (seconds)
	HYS1	0000~9999	0000	Control output hysteresis 1
	HYS2	0000~9999	0000	Control output hysteresis 2
	dbon	on/oFF	OFF	Deadband control

Ítem	Subitem	Range	Default	Description
inP	dEb1	-1999~9999	0	Deadband parameter of heater
	dEb2	-1999~9999	0	Deadband parameter of cooler
	SELE	K tP	K tP	Thermocouple type K (-200~1370 °C)
		J tP		Thermocouple type J (-210~1200 °C)
		t tP		Thermocouple type T (-200~400 °C)
		E tP		Thermocouple type E (-200~1000 °C)
		r tP		Thermocouple type R (-50~1760 °C)
		S tP		Thermocouple type S (-50~1760 °C)
		b tP		Thermocouple type B (250~1820 °C)
		n tP		Thermocouple type N (-200~1300 °C)
		PtEP		Pt100 (-200~850 °C)
		JPtP		JPT100 (-200~850 °C)
		dCtP		DC Type (0~350 mV)
CoEE.	id	0000~0255	0001	Device ID number
	bPS	600	9600	BaudRate : 600
	8888	1200		BaudRate : 1200
		2400		BaudRate : 2400
		4800		BaudRate : 4800
		9600		BaudRate : 9600
		192-		BaudRate : 19200
		384-		BaudRate : 38400
	StYL	8n1	8n1	8 byte size; no parity; 1 stop bit
		8n2		8 byte size; no parity; 2 stop bit
		8o1		8 byte size; odd parity; 1 stop bit
		8E1		8 byte size; even parity; 1 stop bit
	ForE.	HEX.	HEX.	Hex
		ASCI		Ascii
	toUt	0100~9999	0100	Time Out / ms
LoCY	LAbE	L000	L000	Lock label 0
		L001		Lock label 1
		L002		Lock label 2
		L003		Lock label 3

DESCRIPTION OF PARAMETERS

HYS. Control output hysteresis
A hysteresis can be adjusted around the set point to prevent chattering.

rESEt Manual resetl
In PID control, I=0, PV=SV, reset the control output to the fixed value in this section.

Filt PV input filter
This function should be used when the value of PV fluctuates widely, due to noises in the input signal. If a longer constant time is fixed, the filter eliminate more noises.

CYCL Control output cycle time
The cycle time is the period of ON/OFF repetitions of a relay or voltage pulse output in the proportional PID control. The ratio of the ON time to the cycle time is proportional to the control output value.

di r Direction of relay.

LoCY Function list lock
You can set the mode of function lists which can be displayed and edited.

TROUBLESHOOTING

1	Display over scale
-1	Display under scale
0000	PV over scale
UUUU	PV under scale
----	Sensor break

ALARM MODE SETTING

▲: SV ⧖: Alarm setting value ⧗: Hysteresis setting value

Deviation high alarm — St1
OFF / ON

Deviation high alarm — St2
OFF / ON

Deviation low alarm — St3
ON / OFF

Deviation low alarm — St4
ON / OFF

Deviation high/low alarm — St5
ON / OFF / ON

Band alarm — St6
OFF / ON / OFF

Process high alarm — St7
OFF / ON

Process low alarm — St8
ON / OFF

FUNCTION LOCK

LOCK	L003	L002	L001	L000
ALE.				
Pos1			0	0
HYS1				0
dY 1				0
di r1				0
StY1				0
SCAL				
SV		0	0	0
dot				0
SCH				0
SCL				0
Li EH				0
Li EL				0
Unit				0
PErC				0
SCHi				0
SCLi				0
CtrL				
oPEr			0	0
tUn			0	0
bi AS.			0	0
oFSt			0	0
P			0	0
I			0	0

LOCK	L003	L002	L001	L000
d			0	0
rESEt			0	0
Filt			0	0
CodE			0	0
oUt1			0	0
oUt2			0	0
di r1			0	0
di r2			0	0
CYC1			0	0
CYC2			0	0
HYS1			0	0
HYS2			0	0
dbon			0	0
dEb1			0	0
dEb2				
inP				0
P tP				0
J tP				0
t tP				0
E tP				0
r tP				0
S tP				0
b tP				0
n tP				0

LOCK	L003	L002	L001	L000
PtEP				0
JPtP				0
dCtP				0
CoEE.				
id				0
bPS				0
StYL				0
ForE.				0
toUt				0
LoCY				
LAbE	0	0	0	0

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HYSTERESIS

	Heat.	Cool.
SV+dEb2	X	0
SV	X	X
SV+dEb1	X	X
	0	X

dEb1<0 ; dEb2>0

	Heat.	Cool.
SV+dEb2	X	0
SV	0	0
SV+dEb1	0	0
	0	X

dEb1>0 ; dEb2<0

X: (Disable): Inhibit output.
O: (Enable): Enable control output to follow PID / ON-OFF control algorithm.